

AMENDMENTS TO THE CLAIMS

Please replace all previous listings of the claims with the following:

1. (Currently Amended) ~~A mold assembly for generating a composite part from a strengthener in a generally solid phase and a matrix in a generally liquid phase; said mold assembly comprising:~~

~~a) a base mold including a strengthener chamber for receiving the strengthener, a matrix injection inlet for injecting the matrix into said strengthener chamber and an evacuation outlet, said inlet and said outlet defining a propagation direction;~~

~~b) a cover mold including a compression chamber defining a compression wall and a fluid control aperture for injecting a controlling fluid into said compression chamber;~~

~~said cover mold configured to be sealingly mounted to said base mold whereby said strengthener chamber and said compression chamber are adjacent; and~~

~~c) a deformable member defining the boundary between said strengthener chamber and said compression chamber, said deformable member configured to pressurize the matrix toward the strengthener and propagate the matrix along said propagation direction upon compression exerted on said deformable member by the controlling fluid;~~

A mold assembly as recited in claim 84, wherein said compression wall provides a physical obstacle to a deflection of said deformable member as the matrix is injected into said strengthener chamber and when said controlling fluid is injected into said compression chamber.

2. (Original) A mold assembly as recited in claim 1, wherein said matrix injection inlet includes a diffusion passage provided on a contact wall of said strengthener chamber.

3. (Cancelled)

4. (Previously Presented) A mold assembly as recited in claim 1, wherein said evacuation outlet is connectable to a vacuum source to selectively generate at least a partial

vacuum in said strengthener chamber.

5. (Previously Presented) A mold assembly as recited in claim 1, wherein the base mold includes a contact wall, peripheral walls extending around said contact wall and shoulders extending around said peripheral walls; said cover mold includes the compression wall, peripheral walls extending around said compression wall and shoulders extending around said peripheral walls, said cover mold being sealingly mounted to said base mold through a complementary ridge and groove arrangement provided along said shoulders of said base mold and said cover mold.

6. (Original) A mold assembly as recited in claim 5, wherein said ridge and groove arrangement has a generally triangular cross-sectional profile.

7. (Previously Presented) A mold assembly as recited in claim 1, wherein said fluid aperture is connectable to a fluid source to generate pressure in said compression chamber.

8. (Previously Presented) A mold assembly as recited in claim 1, wherein said fluid aperture opens into said cover mold and said matrix injection inlet opens into said base mold in a generally similar direction.

9. (Previously Presented) A mold assembly as recited in claim 1, wherein said cover mold includes a vent opening into said compression chamber and extending through said cover mold.

10. (Original) A mold assembly as recited in claim 9, wherein said vent is connected to a vacuum source to selectively generate at least a partial vacuum in said compression chamber.

11. (Previously Presented) A mold assembly as recited in claim 9, wherein said vent

comprises a valve to regulate the flow of the controlling fluid through said vent.

12. (Previously Presented) A mold assembly as recited in claim 1, wherein a gap defined by said strengthener chamber and said compression chamber has a non-uniform thickness.

13. (Previously Presented) A mold assembly as recited in claim 12, wherein said compression chamber has a first thickness and said strengthener chamber has a second thickness, said first and second thicknesses being variable upon deformation of said deformable member.

14. (Previously Presented) A mold assembly as recited in claim 1, wherein said deformable member includes a membrane sealingly mounted between said strengthener chamber and said compression chamber.

15. (Previously Presented) A mold assembly as recited in claim 14, wherein said membrane is impermeable to liquid.

16. (Original) A mold assembly as recited in claim 1, wherein said membrane is permeable to gas.

17. (Cancelled)

18. (Original) A mold assembly as recited in claim 1, wherein said mold assembly includes temperature controlling means.

19. (Original) A mold assembly as recited in claim 1, wherein said strengthener chamber comprises a contact wall for locating the strengthener, said contact wall having a controlled surface finish.

20. (Original) A mold assembly as recited in claim 1, wherein said base mold and said cover mold are rigid.

21. (Original) A mold assembly as recited in claim 1, wherein said deformable member includes a deformable element and a membrane, said membrane being sealingly mounted between said strengthener chamber and said compression chamber, said deformable element being provided in at least a portion of said compression chamber.

22. (Previously Presented) A mold assembly as recited in claim 21, wherein a surface of said deformable element is so shaped as to be complementary to the shape of the strengthener.

23. (Previously Presented) A mold assembly as recited in claim 21, wherein a surface of said deformable element includes a series of grooved channels so configured as to receive said membrane.

24. (Previously Presented) A mold assembly as recited in claim 21, wherein said material for forming said deformable element is injected directly into said compression chamber via said fluid aperture.

25. (Original) A mold assembly as recited in claim 21, wherein said deformable element includes a generally porous and elastic material.

26. (Original) A mold assembly as recited in claim 1, wherein said deformable member includes an elastic material being provided in at least a portion of said compression chamber and adjacent to said strengthener chamber.

27. (Previously Presented) A mold assembly as recited in claim 12, wherein said cover mold includes compartmentalized portions so configured as to independently move with

respect to one another toward and away from said strengthener chamber for providing a gap of variable thickness.

28. (Original) A mold assembly as recited in claim 1, wherein said mold assembly further includes a tube provided in said compression chamber and adjacent to said strengthener chamber, said tube being connected to a pressure source and deformable under pressure generated from the pressure source, said tube including at least one extremity mounted through said cover mold for controlling the pressure in said tube.

29. (Previously Presented) A mold assembly as recited in claim 1, wherein said cover mold includes the compression wall including a plurality of channels provided adjacent to said deformable member.

30. (Previously Presented) A mold assembly as recited in claim 29, wherein said plurality of channels includes intersecting channels configured so as to cooperate with said deformable member.

31. (Previously Presented) A mold assembly as recited in claim 29, wherein said matrix injection inlet of said base mold includes a diffusion passage extending on a contact wall of said strengthener chamber; said diffusion passage being generally aligned with at least one of said plurality of channels and said matrix injection inlet of said base mold being generally aligned with at least one other of said plurality of channels.

Claims 32 to 44 (Cancelled)

45. (Currently Amended) ~~A mold assembly for generating a composite part from a strengthener and a matrix, said mold assembly comprising:~~

~~a) a base mold including a strengthener chamber for receiving the strengthener, a matrix injection inlet for injecting the matrix in said strengthener chamber and an~~

~~evacuation outlet, said inlet and said outlet defining a propagation direction;~~

~~b) a cover mold including a compression chamber defining a rigid compression wall and a fluid aperture for injecting a controlling fluid in said compression chamber; said cover mold being so configured as to be sealingly mounted on said base mold whereby said strengthener chamber and said compression chamber are adjacent; and~~

~~e) a deformable member provided in a gap defined by said strengthener chamber and said compression chamber, said deformable member accommodating a deformation zone in said strengthener chamber from a portion of the matrix injected into the strengthener chamber, said deformable member being pressurized by the controlling fluid in proximity of said deformation zone for redirecting the portion of matrix generating said deformation zone back to the strengthener and for propagating the matrix along said propagation direction;~~

A mold assembly as recited in claim 91, wherein said rigid compression wall provides a physical obstacle to a deflection of said deformable member as the matrix is injected into said strengthener chamber and when said controlling fluid is injected into said compression chamber.

Claims 46-69 (Cancelled)

70. (Previously Presented) A mold assembly as recited in claim 1, wherein said deformable member is able to be deflected toward said compression wall from the matrix injected into the strengthener chamber to generate a deformation zone, said deformable member receiving pressure from the controlling fluid in proximity of said deformation zone for redirecting the matrix towards the strengthener.

71. (Previously Presented) A mold assembly as recited in claim 70, wherein said deformation zone is adjacent to a matrix flow front corresponding to a portion of the strengthener impregnated by the matrix, said matrix flow front propagating in the strengthener along said propagation direction as the matrix in said deformation zone is redirected to the strengthener.

Claims 72-75 (Cancelled)

76. (Previously Presented) A mold assembly as recited in claim 1, wherein said mold assembly includes a porous medium provided in said compression chamber for controlling the propagation of the fluid injected in said compression chamber.

77. (Previously Presented) A mold assembly as recited in claim 76, wherein said porous medium is made from a generally deformable element.

78. (Previously Presented) A mold assembly as recited in claim 1, wherein said controlling fluid is an incompressible fluid.

79. (Previously Presented) A mold assembly as recited in claim 1, wherein said deformable member is further configured to contact said compression wall as the matrix propagates along said propagation direction.

80. (Previously Presented) A mold assembly as recited in claim 1, wherein said deformable member is configured to contact said compression wall to thereby form a first pressure region in said compression chamber and a second pressure region in said compression chamber, wherein the first pressure region is upstream, relative to said propagation direction, of the second pressure region, and wherein a first pressure in the first pressure region is greater than a second pressure in the second pressure region.

81. (Previously Presented) A mold assembly as recited in claim 1, wherein said fluid aperture for injecting said controlling fluid is located in closer to said matrix injection inlet than to said evacuation outlet.

82. (Previously Presented) A mold assembly as recited in claim 1, further including a vent

for releasing pressure in said compression chamber, the vent being positioned downstream of said fluid aperture in said propagation direction.

83. (Previously Presented) A mold assembly for generating a composite part from a strengthener in a generally solid phase and a matrix in a generally liquid phase; said mold assembly comprising:

- a) a base mold including a strengthener chamber for receiving the strengthener, a matrix injection inlet for injecting the matrix into said strengthener chamber and an evacuation outlet, said inlet and said outlet defining a propagation direction;

- b) a cover mold including a compression chamber defining a compression wall and a fluid aperture for injecting a controlling fluid into said compression chamber;

said cover mold configured to be sealingly mounted to said base mold whereby said strengthener chamber and said compression chamber are adjacent; and

- c) a deformable member defining the boundary between said strengthener chamber and said compression chamber, said deformable member configured to pressurize the matrix toward the strengthener and propagate the matrix along said propagation direction upon compression exerted on said deformable member by the controlling fluid, wherein said compression chamber is divided into a first pressure region and a second pressure region by said deformable member when the matrix is injected into said strengthener chamber and when said controlling fluid is injected into said compression chamber.

84. (Previously Presented) A mold assembly for generating a composite part from a strengthener in a generally solid phase and a matrix in a generally liquid phase; said mold assembly comprising:

- a) a base mold including a strengthener chamber for receiving the strengthener, a matrix injection inlet for injecting the matrix into said strengthener chamber and an evacuation outlet, said inlet and said outlet defining a propagation direction;

- b) a cover mold including a compression chamber defining a compression wall and a fluid aperture for injecting a controlling fluid into said compression chamber;

said cover mold configured to be sealingly mounted to said base mold whereby said strengthener chamber and said compression chamber are adjacent; and

c) a deformable member defining the boundary between said strengthener chamber and said compression chamber, said deformable member configured to pressurize the matrix toward the strengthener and propagate the matrix along said propagation direction upon compression exerted on said deformable member by the controlling fluid, wherein said deformable member is configured to contact said compression wall when said controlling fluid is injected into said compression chamber.

85. (Previously Presented) A mold assembly as recited in claim 45, wherein said controlling fluid is an incompressible fluid.

86. (Previously Presented) A mold assembly as recited in claim 45, wherein said deformable member is further configured to contact said compression wall as the matrix propagates along said propagation direction.

87. (Previously Presented) A mold assembly as recited in claim 45, wherein said deformable member is configured to contact said compression wall to thereby form a first pressure region in said compression chamber and a second pressure region in said compression chamber, wherein the first pressure region is upstream, relative to said propagation direction, of the second pressure region, and wherein a first pressure in the first pressure region is greater than a second pressure in the second pressure region.

88. (Previously Presented) A mold assembly as recited in claim 45, wherein said fluid aperture for injecting said controlling fluid is located in closer to said matrix injection inlet than to said evacuation outlet.

89. (Previously Presented) A mold assembly as recited in claim 45, further including a vent for releasing pressure in said compression chamber, the vent being positioned downstream

of said fluid aperture in said propagation direction.

90. (Previously Presented) A mold assembly for generating a composite part from a strengthener and a matrix; said mold assembly comprising:

a) a base mold including a strengthener chamber for receiving the strengthener, a matrix injection inlet for injecting the matrix in said strengthener chamber and an evacuation outlet, said inlet and said outlet defining a propagation direction;

b) a cover mold including a compression chamber defining a compression wall and a fluid aperture for injecting a controlling fluid in said compression chamber; said cover mold being so configured as to be sealingly mounted on said base mold whereby said strengthener chamber and said compression chamber are adjacent; and

c) a deformable member provided in a gap defined by said strengthener chamber and said compression chamber, said deformable member accommodating a deformation zone in said strengthener chamber from a portion of the matrix injected into the strengthener chamber, said deformable member being pressurized by the controlling fluid in proximity of said deformation zone for redirecting the portion of matrix generating said deformation zone back to the strengthener and for propagating the matrix along said propagation direction, wherein said compression chamber is divided into a first pressure region and a second pressure region by said deformable member when the matrix is injected into said strengthener chamber and when said controlling fluid is injected into said compression chamber.

91. (Previously Presented) A mold assembly for generating a composite part from a strengthener and a matrix; said mold assembly comprising:

a) a base mold including a strengthener chamber for receiving the strengthener, a matrix injection inlet for injecting the matrix in said strengthener chamber and an evacuation outlet, said inlet and said outlet defining a propagation direction;

b) a cover mold including a compression chamber defining a compression wall and a fluid aperture for injecting a controlling fluid in said compression chamber; said cover mold

being so configured as to be sealingly mounted on said base mold whereby said strengthener chamber and said compression chamber are adjacent; and

c) a deformable member provided in a gap defined by said strengthener chamber and said compression chamber, said deformable member accommodating a deformation zone in said strengthener chamber from a portion of the matrix injected into the strengthener chamber, said deformable member being pressurized by the controlling fluid in proximity of said deformation zone for redirecting the portion of matrix generating said deformation zone back to the strengthener and for propagating the matrix along said propagation direction,

wherein said deformable member is configured to contact said compression wall when said controlling fluid is injected into said compression chamber.

92. (Currently Amended) A mold assembly for generating a composite part from a strengthener and a matrix, said mold assembly comprising:

a base mold and a cover mold defining therebetween a mold cavity including a strengthener chamber and a compression chamber, said strengthener chamber configured to receive a strengthener and a matrix, said compression chamber configured to receive a controlling fluid, said cover mold including a compression wall; and

a deformable member, wherein said deformable member defines a boundary between said strengthener chamber and said compression chamber,

wherein ~~said compression wall provides a physical obstacle to a deflection of said~~ deformable member is configured to contact said compression wall when said controlling fluid is injected into said compression chamber.

93. (Previously Presented) The mold assembly of claim 92, further comprising:

a matrix injection inlet for injecting the matrix into said strengthener chamber and an evacuation outlet, said inlet and said outlet defining a propagation direction,

wherein said compression chamber has a thickness defined between said deformable member and said compression wall, and wherein, prior to the matrix being injected into said strengthener chamber, said compression chamber has a substantially uniform thickness

along the propagation direction.

94. (Previously Presented) The mold assembly of claim 93, wherein said mold cavity has a non-uniform thickness along the propagation direction.

95. (Previously Presented) The mold assembly of claim 93, wherein said strengthener chamber has a thickness and wherein, prior to matrix being injected into said strengthener chamber, the thickness of the strengthener chamber is non-uniform along the propagation direction.

96. (Previously Presented) The mold assembly of claim 92, further comprising:
a matrix injection inlet for injecting the matrix into said strengthener chamber and an evacuation outlet, said inlet and said outlet defining a propagation direction,
wherein said compression wall is configured to limit the deflection of the deformable member a substantially uniform amount along the propagation direction.

97. (Currently Amended) A mold assembly for generating a composite part from a strengthener and a matrix, said mold assembly comprising:

a base mold and a cover mold defining therebetween a mold cavity including a strengthener chamber and a compression chamber, said strengthener chamber configured to receive a strengthener and a matrix, said compression chamber configured to receive a controlling fluid, said cover mold including a rigid compression wall;

a matrix injection inlet for injecting the matrix into said strengthener chamber and an evacuation outlet, said inlet and said outlet defining a propagation direction; and

a deformable member, wherein said deformable member defines a boundary between said strengthener chamber and said compression chamber,

wherein said compression chamber has a thickness defined between said deformable member and said rigid compression wall, and wherein, prior to the matrix being injected into said strengthener chamber, said compression chamber has a ~~substantially~~ uniform

thickness along the propagation direction, and

wherein said mold cavity has a non-uniform thickness along the propagation direction.

98. (Currently Amended) The mold assembly of claim 97, wherein said rigid compression wall provides a physical obstacle to a deflection of said deformable member when said controlling fluid is injected into said compression chamber and said deformable member is configured to contact said compression wall when said controlling fluid is injected into said compression chamber.